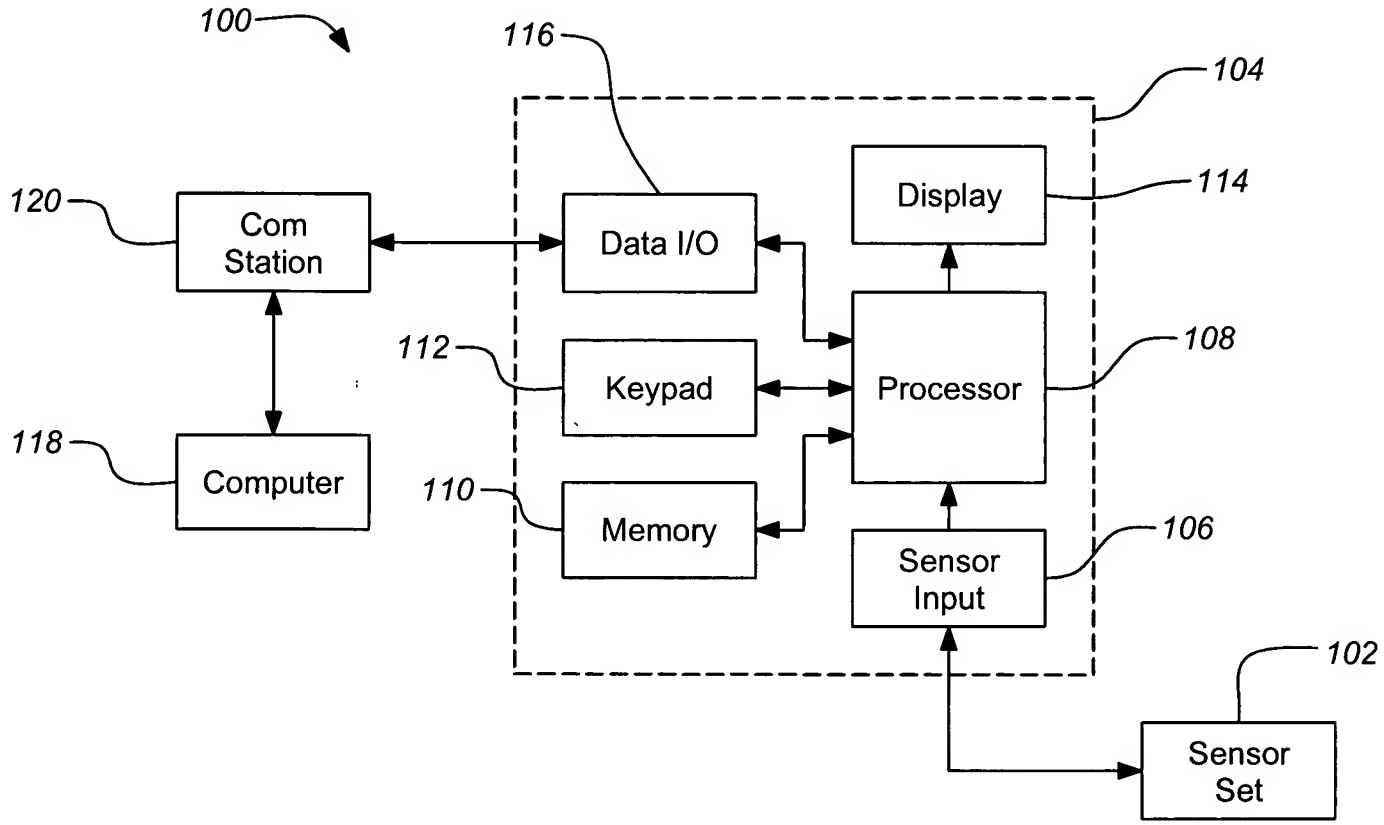
100
116
104
120
Com Station
Data I/O
Display
114
112
Keypad
Processor
108
118
Computer
110
Memory
Sensor Input
106
102
Sensor Set

FIG. 1A

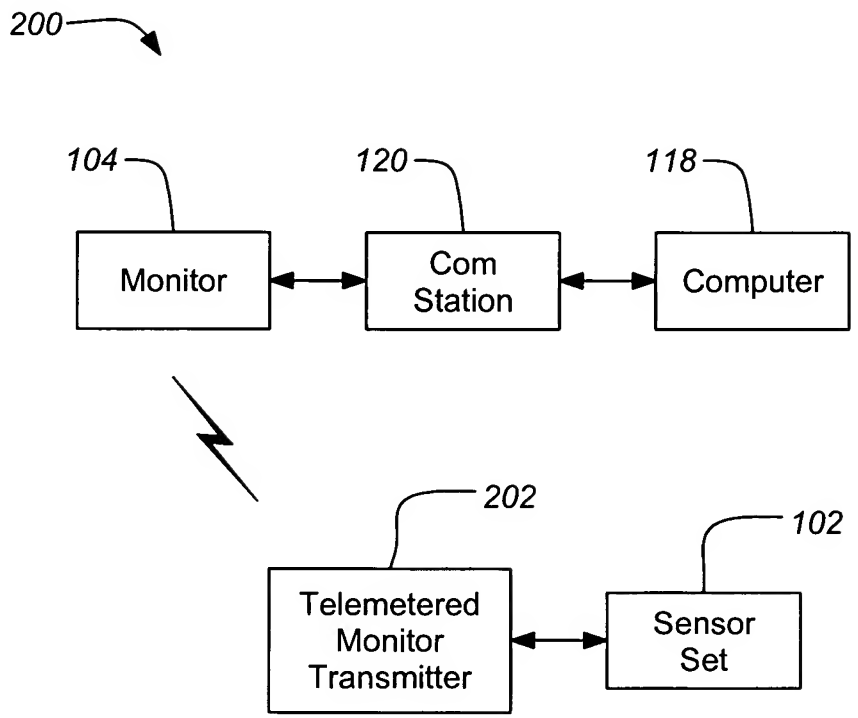
200
104
120
118
Monitor
Com Station
Computer
202
102
Telemetered Monitor Transmitter
Sensor Set

FIG. 1B

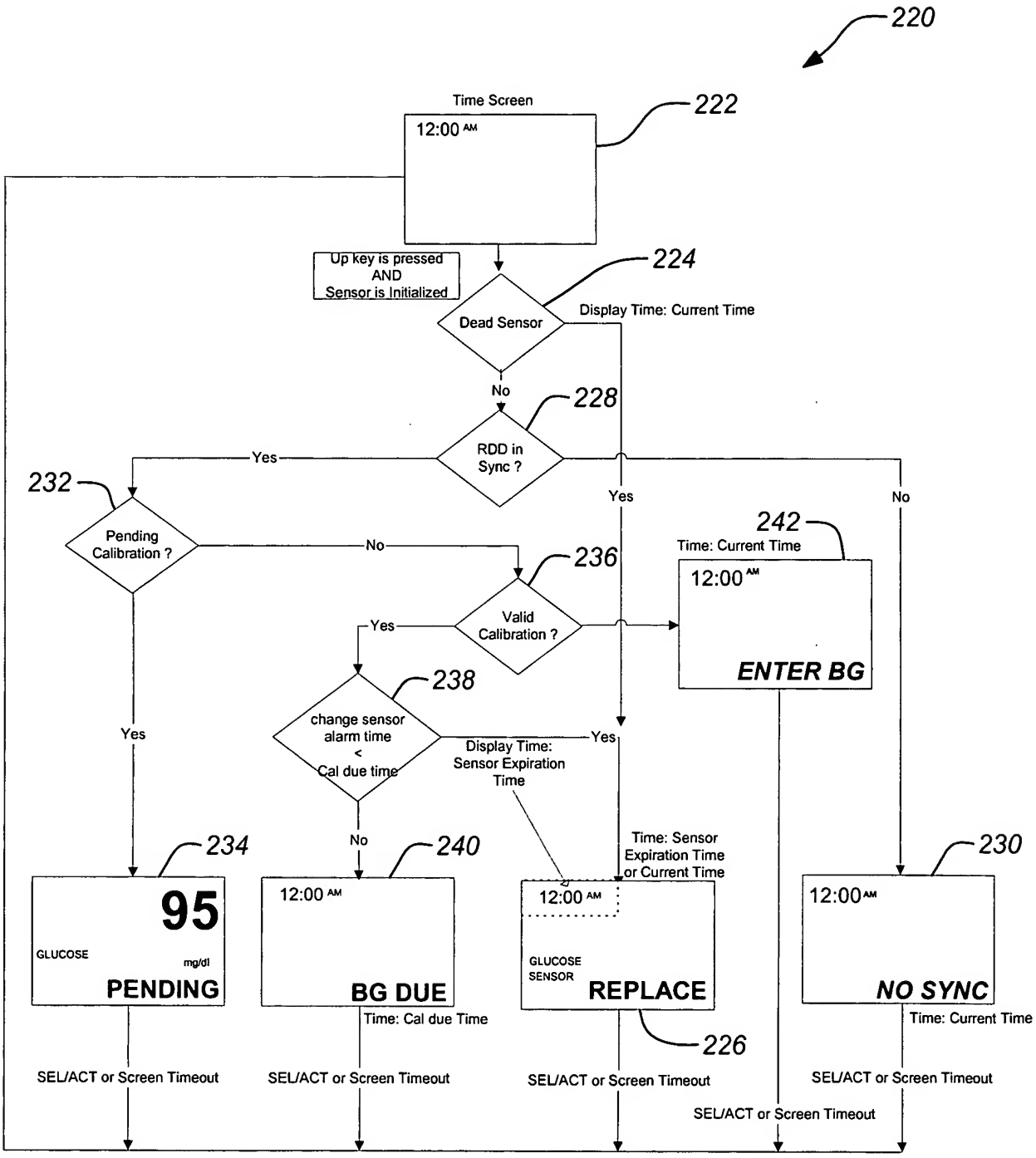
220
Time Screen
12:00 AM
222
Up key is pressed AND Sensor is Initialized
224
Dead Sensor
Display Time: Current Time
No
228
RDD in Sync ?
Yes
Yes
No
232
Pending Calibration ?
No
242
Time: Current Time
12:00 AM
ENTER BG
236
Valid Calibration ?
Yes
238
change sensor alarm time < Cal due time
Yes
Display Time: Sensor Expiration Time
Yes
No
234
95
GLUCOSE
mg/dl
PENDING
240
12:00 AM
BG DUE
Time: Cal due Time
Time: Sensor Expiration Time or Current Time
12:00 AM
GLUCOSE SENSOR
REPLACE
226
230
12:00 AM
NO SYNC
Time: Current Time
SEL/ACT or Screen Timeout
SEL/ACT or Screen Timeout
SEL/ACT or Screen Timeout
SEL/ACT or Screen Timeout
SEL/ACT or Screen Timeout

FIG. 2A

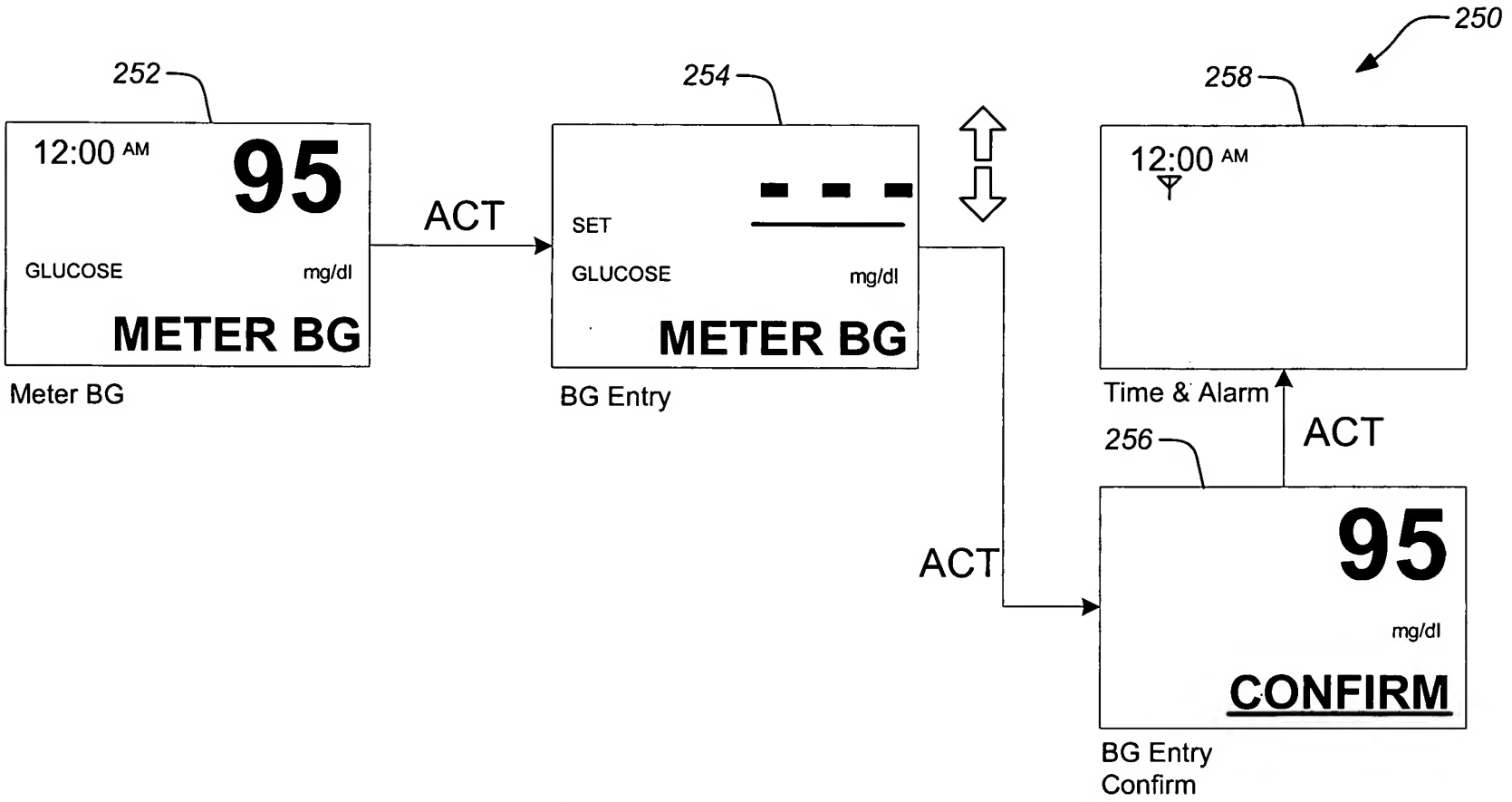
250
252
12:00 AM
95
GLUCOSE
mg/dl
METER BG
Meter BG
ACT
254
SET
GLUCOSE
mg/dl
METER BG
BG Entry
258
12:00 AM
Time & Alarm
ACT
256
95
mg/dl
CONFIRM
BG Entry
Confirm
ACT

FIG. 2B

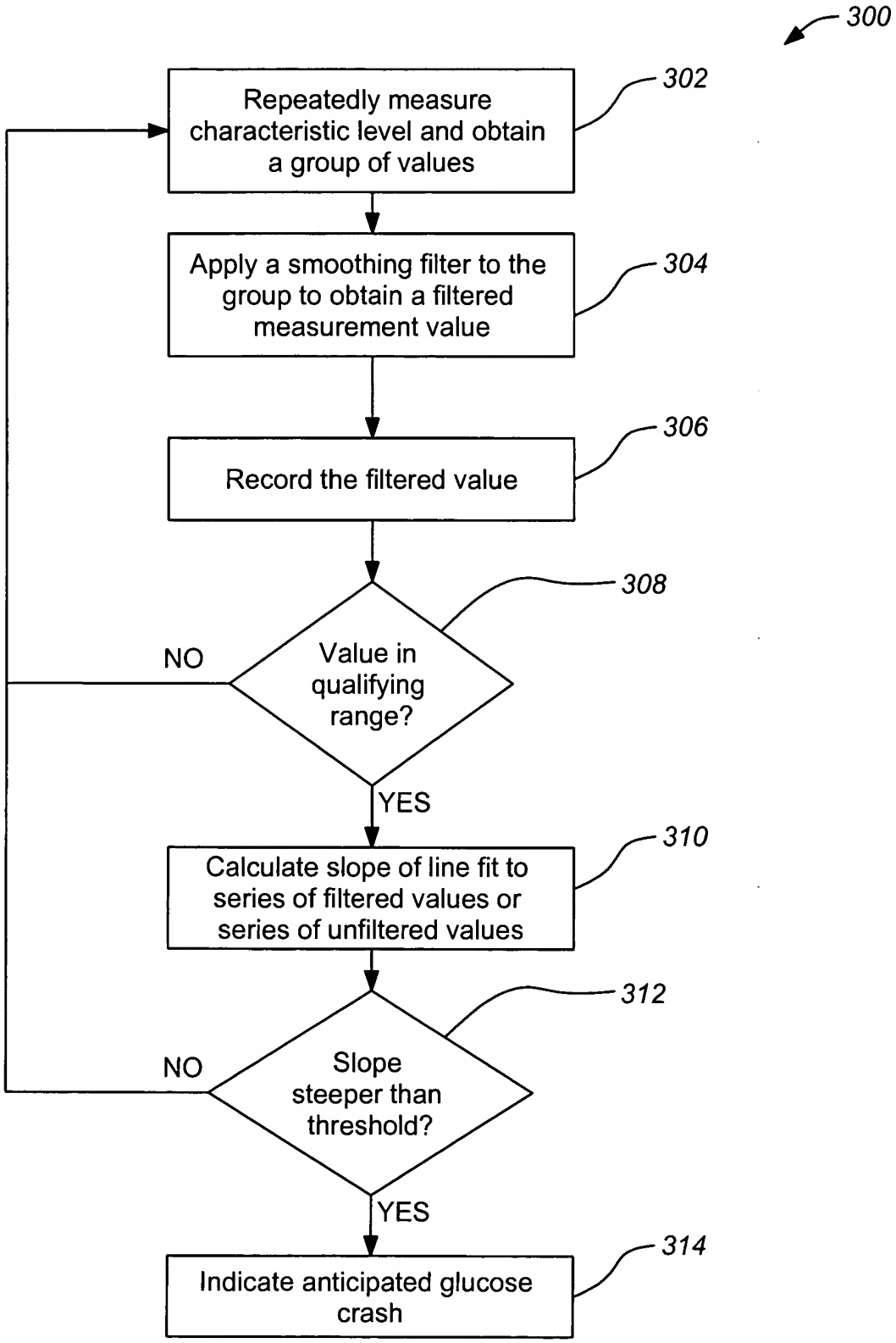
300
Repeatedly measure characteristic level and obtain a group of values
302
Apply a smoothing filter to the group to obtain a filtered measurement value
304
Record the filtered value
306
Value in qualifying range?
308
NO
YES
Calculate slope of line fit to series of filtered values or series of unfiltered values
310
Slope steeper than threshold?
312
NO
YES
Indicate anticipated glucose crash
314

FIG. 3A

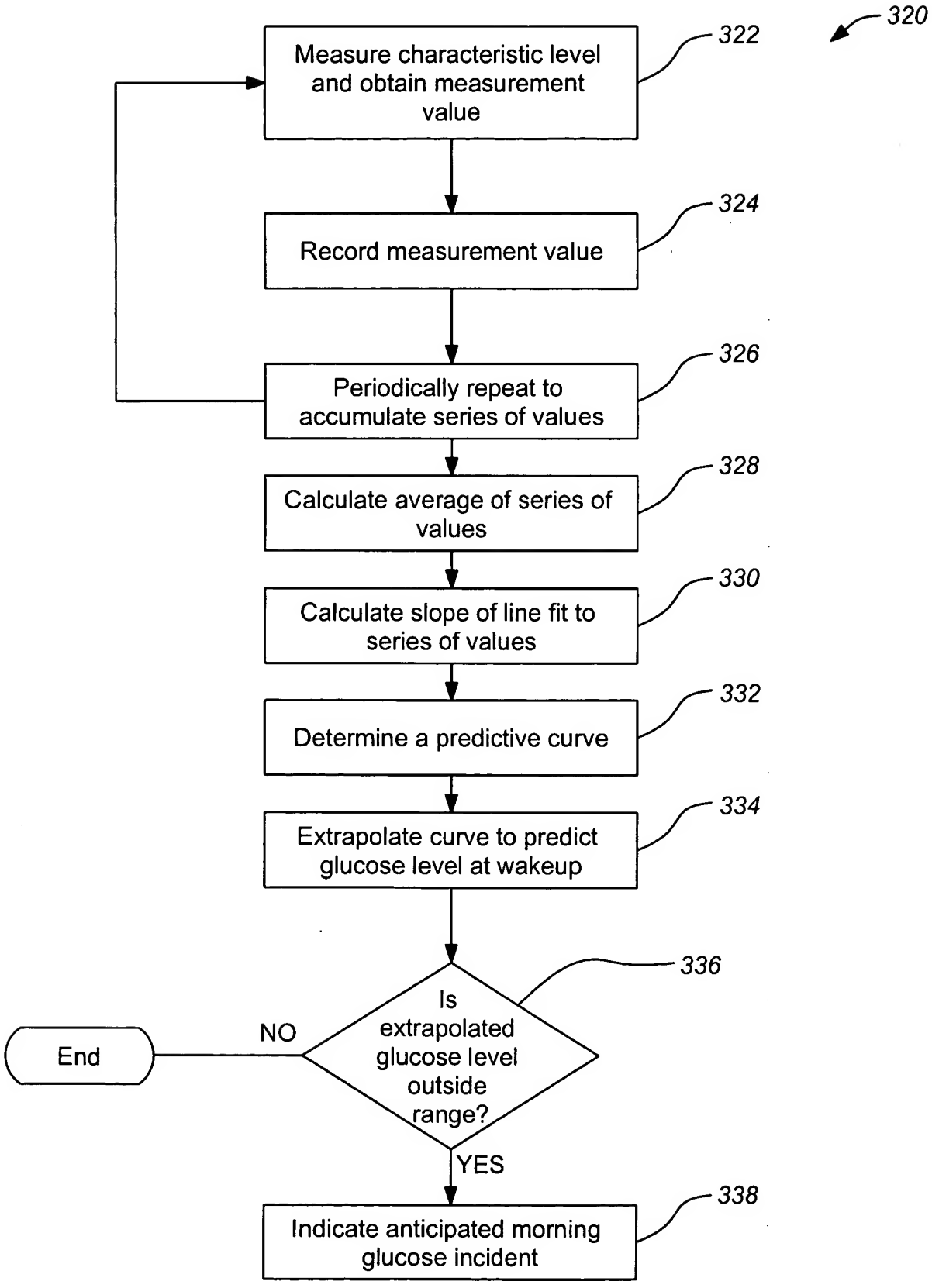
320
Measure characteristic level and obtain measurement value
322
Record measurement value
324
Periodically repeat to accumulate series of values
326
Calculate average of series of values
328
Calculate slope of line fit to series of values
330
Determine a predictive curve
332
Extrapolate curve to predict glucose level at wakeup
334
Is extrapolated glucose level outside range?
336
NO
End
YES
Indicate anticipated morning glucose incident
338

FIG. 3B

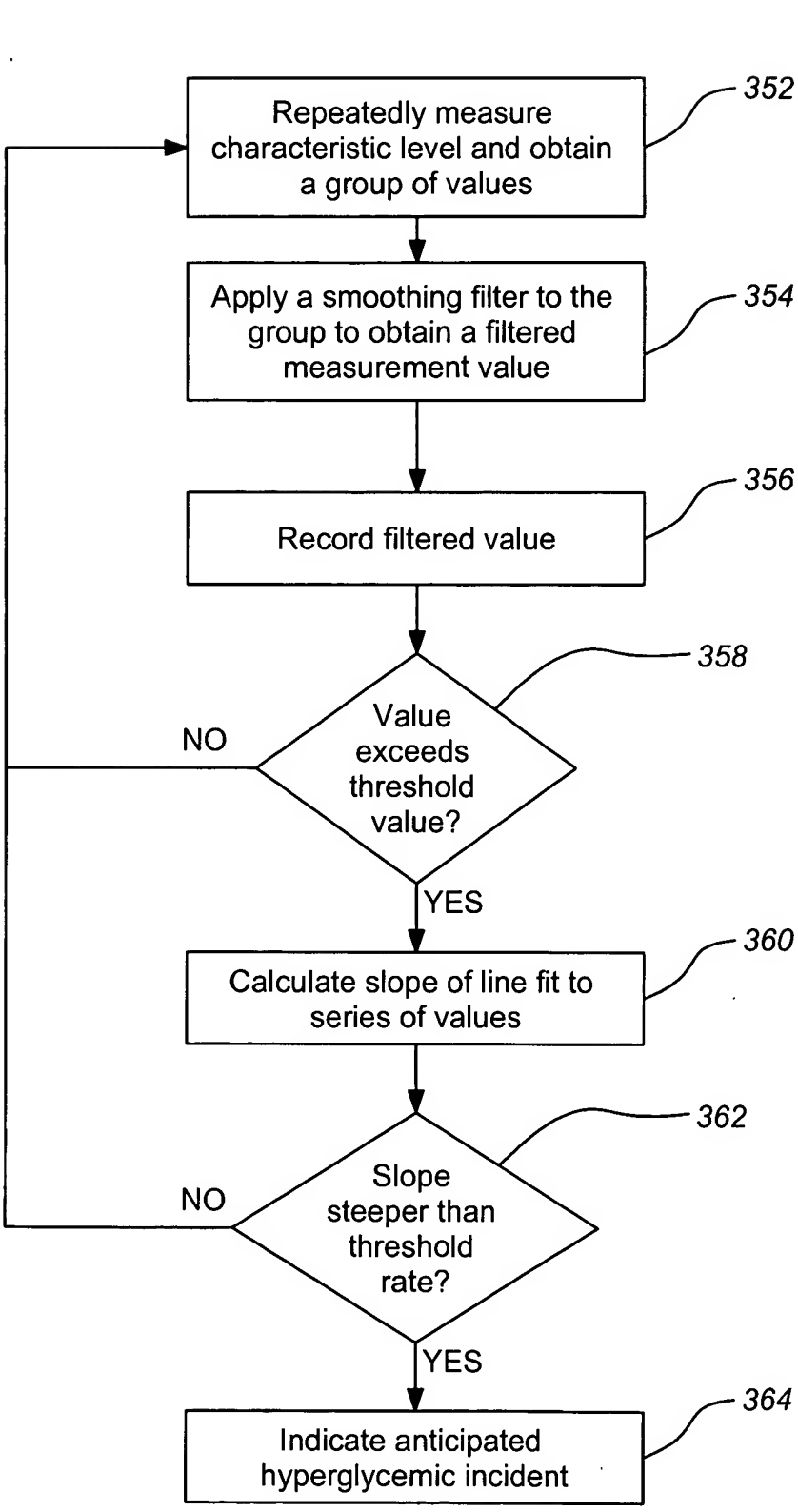
350
Repeatedly measure characteristic level and obtain a group of values
352
Apply a smoothing filter to the group to obtain a filtered measurement value
354
Record filtered value
356
Value exceeds threshold value?
358
NO
YES
Calculate slope of line fit to series of values
360
Slope steeper than threshold rate?
362
NO
YES
Indicate anticipated hyperglycemic incident
364

FIG. 3C

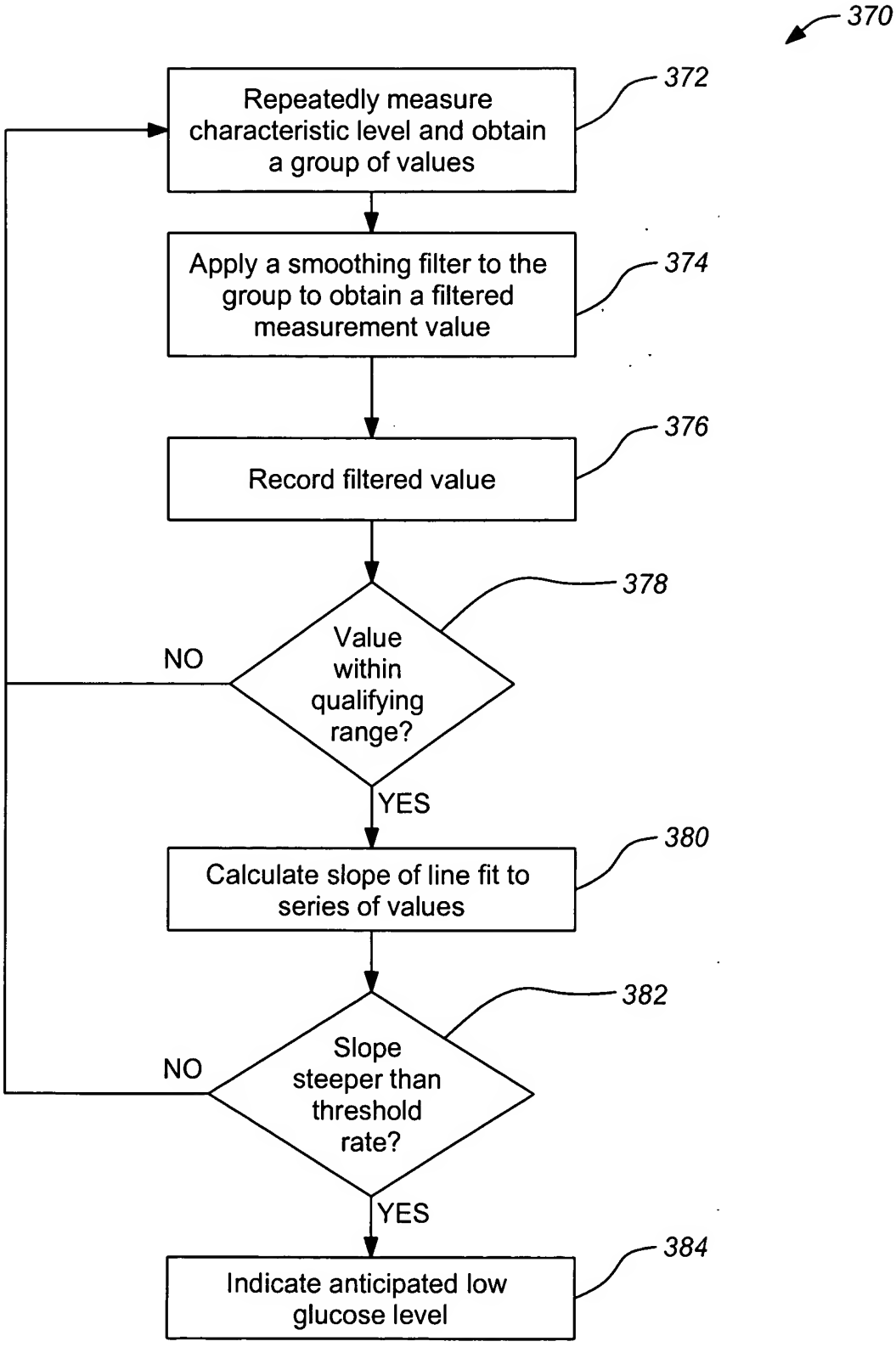
370
Repeatedly measure characteristic level and obtain a group of values
372
Apply a smoothing filter to the group to obtain a filtered measurement value
374
Record filtered value
376
Value within qualifying range?
378
NO
YES
Calculate slope of line fit to series of values
380
Slope steeper than threshold rate?
382
NO
YES
Indicate anticipated low glucose level
384

FIG. 3D

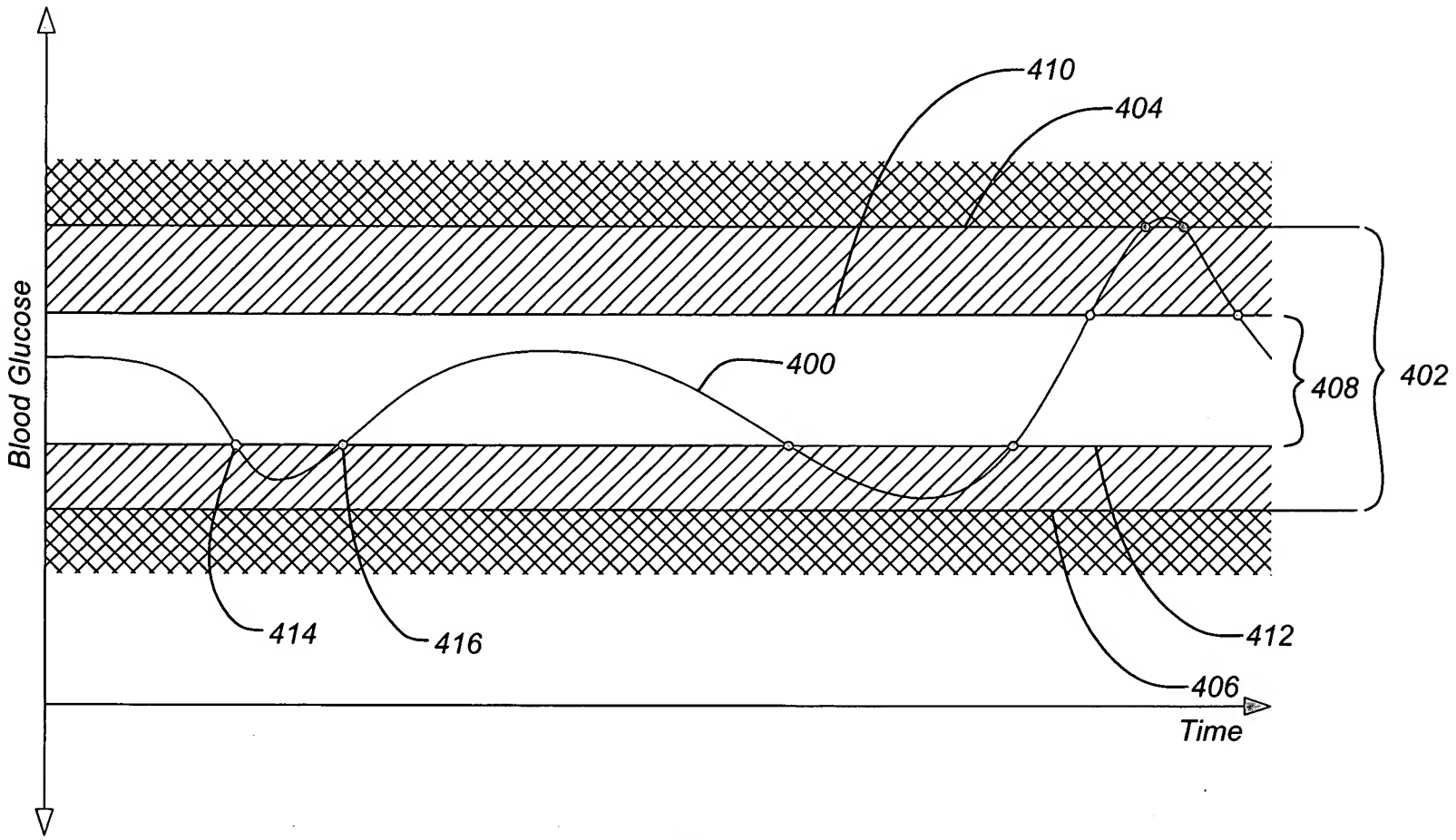

FIG. 4A

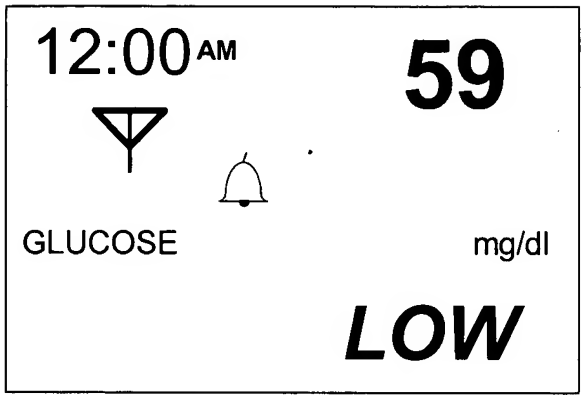

FIG. 4B

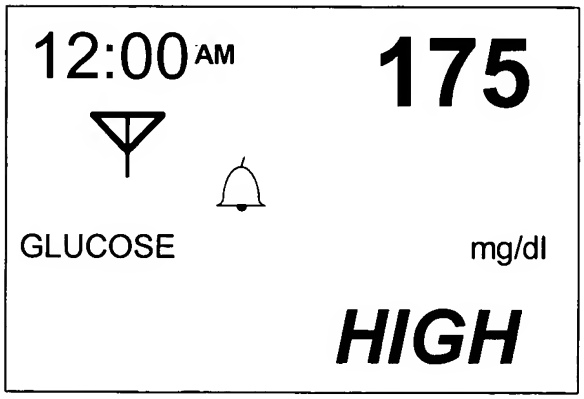

FIG. 4C

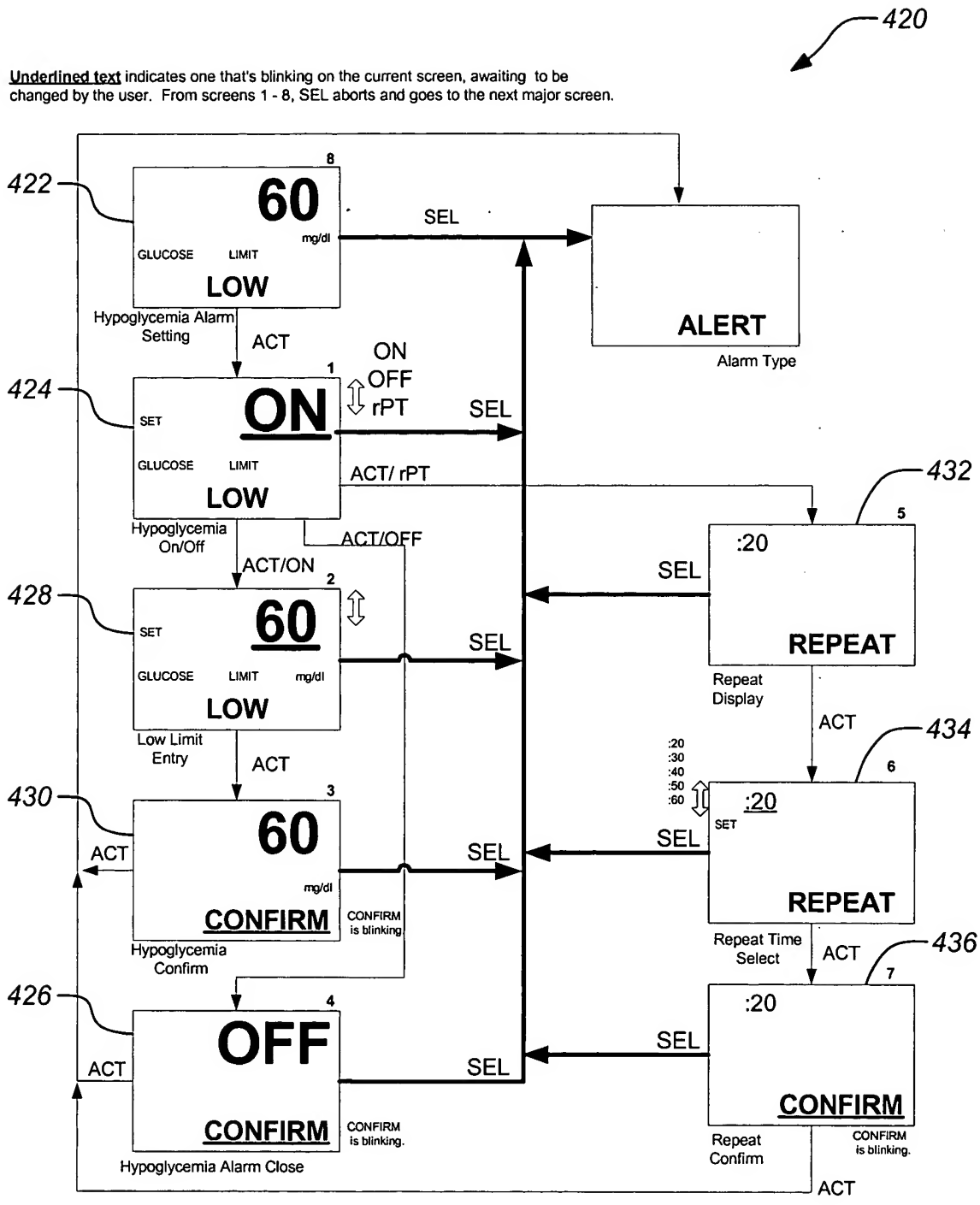
420
Underlined text indicates one that's blinking on the current screen, awaiting to be changed by the user. From screens 1 - 8, SEL aborts and goes to the next major screen.
422
8
60
mg/dl
GLUCOSE LIMIT
LOW
Hypoglycemia Alarm Setting
SEL
ALERT
Alarm Type
ACT
424
1
ON
SET
GLUCOSE LIMIT
LOW
Hypoglycemia On/Off
ON
OFF
rPT
SEL
ACT/ rPT
ACT/OFF
ACT/ON
428
2
60
SET
GLUCOSE LIMIT mg/dl
LOW
Low Limit Entry
SEL
ACT
430
3
60
mg/dl
CONFIRM
Hypoglycemia Confirm
ACT
SEL
CONFIRM is blinking
426
4
OFF
CONFIRM
Hypoglycemia Alarm Close
ACT
SEL
CONFIRM is blinking.
432
5
:20
REPEAT
Repeat Display
SEL
ACT
434
6
:20
:30
:40
:50
:60
:20
SET
REPEAT
Repeat Time Select
SEL
ACT
436
7
:20
CONFIRM
Repeat Confirm
SEL
CONFIRM is blinking.
ACT

FIG. 4D

Underlined text indicates one that's blinking on the current screen, awaiting to be changed by the user. From screens 1 - 8, SEL aborts and goes to the next major screen.

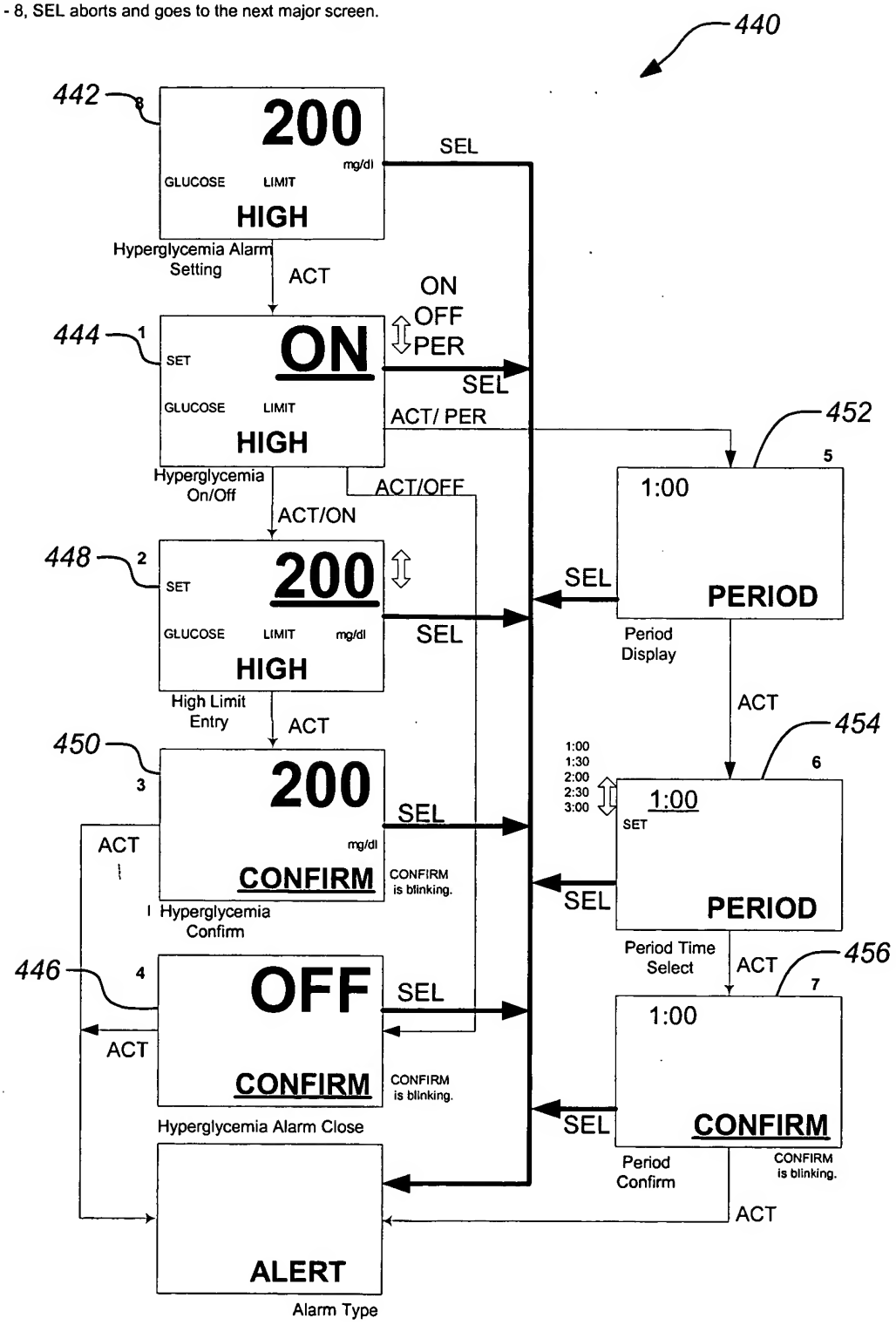

FIG. 4E

Underlined text indicates one that's blinking on the current screen, awaiting to be changed by the user. From screens 1 - 2, SEL aborts and goes to the next major screen.

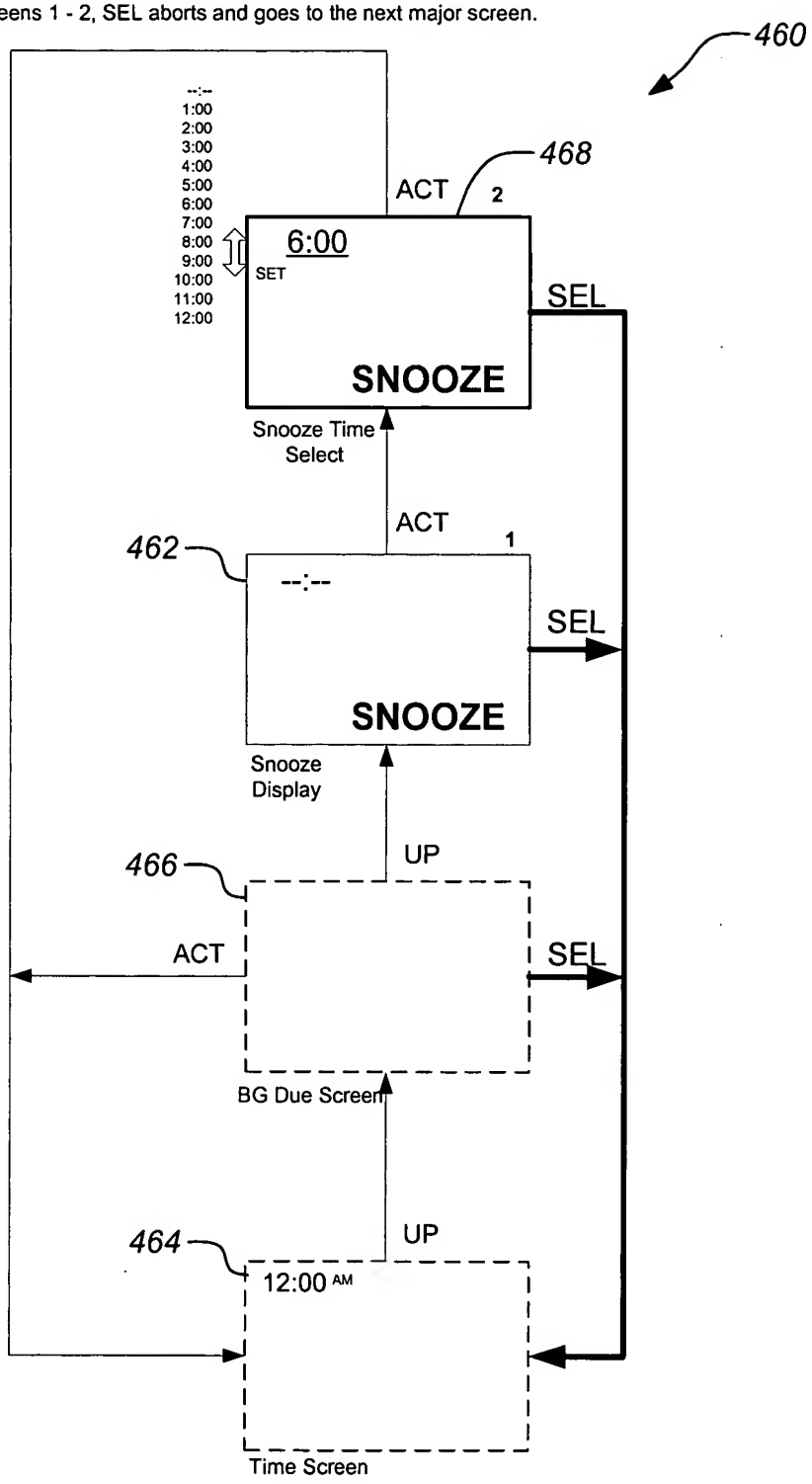

FIG. 4F

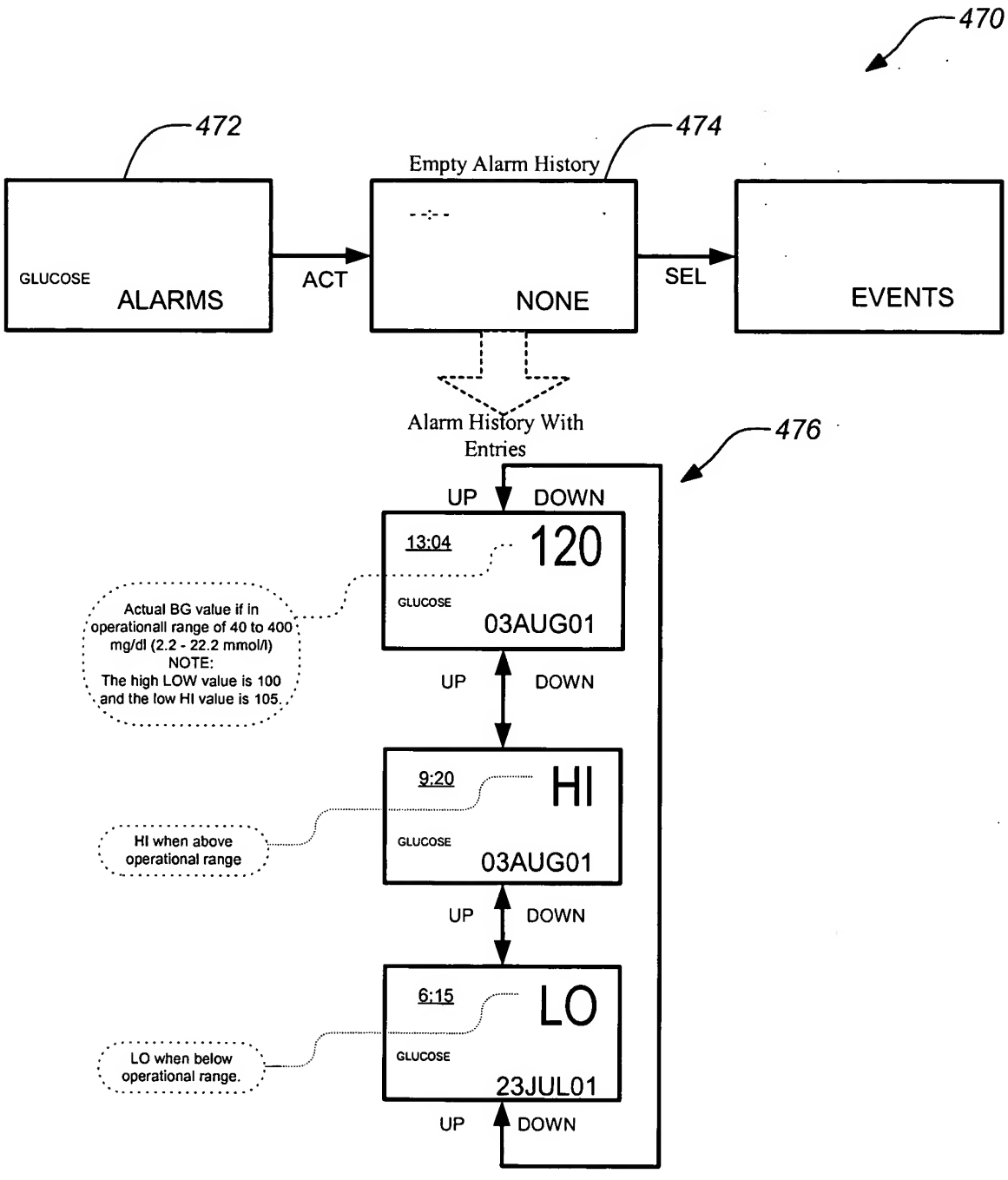
470
472
474
Empty Alarm History
GLUCOSE
ALARMS
ACT
NONE
SEL
EVENTS
Alarm History With Entries
476
UP
DOWN
13:04
120
GLUCOSE
03AUG01
Actual BG value if in operationall range of 40 to 400 mg/dl (2.2 - 22.2 mmol/l)
NOTE:
The high LOW value is 100 and the low HI value is 105.
9:20
HI
HI when above operational range
6:15
LO
LO when below operational range.
23JUL01

FIG. 4G

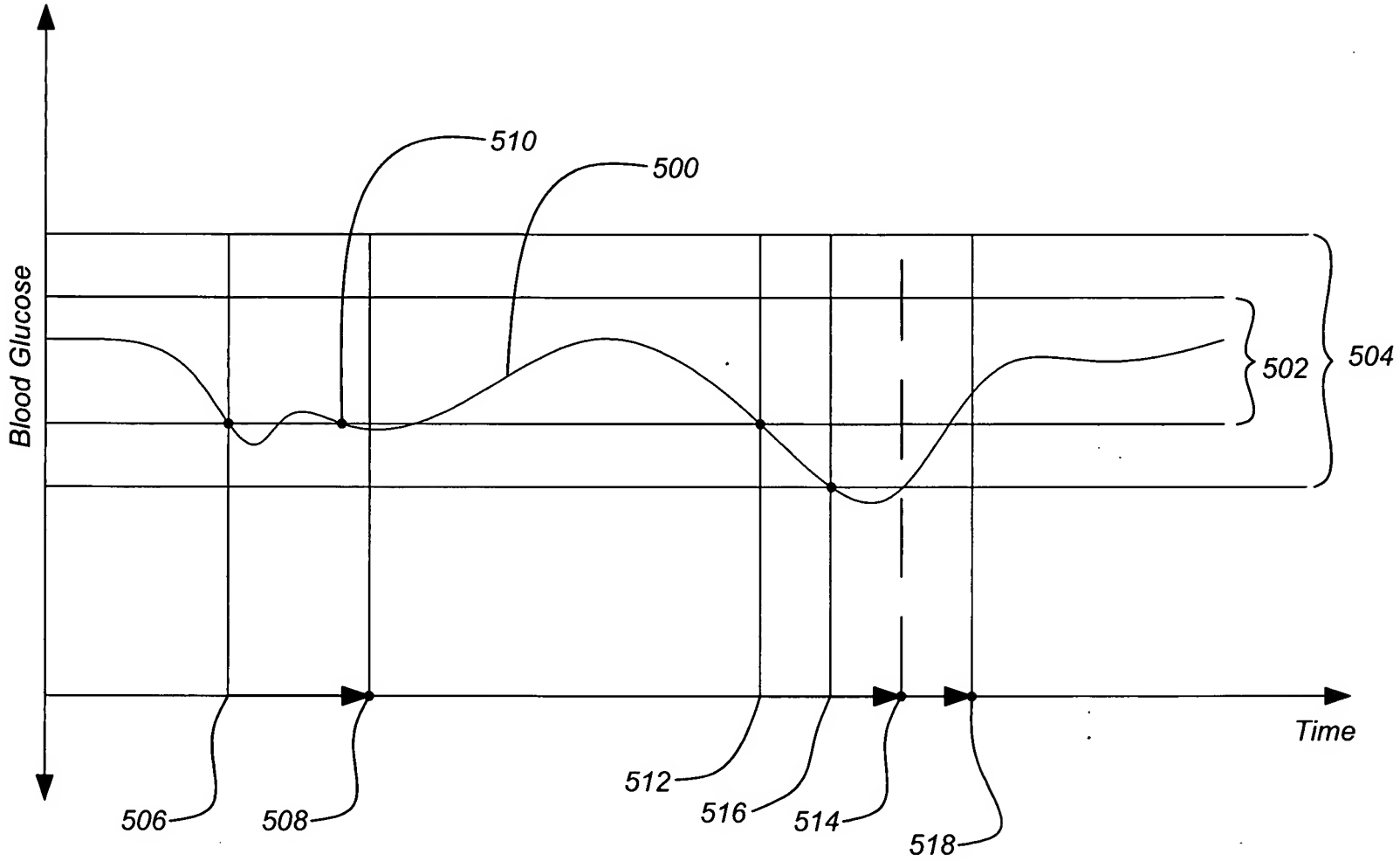

FIG. 5

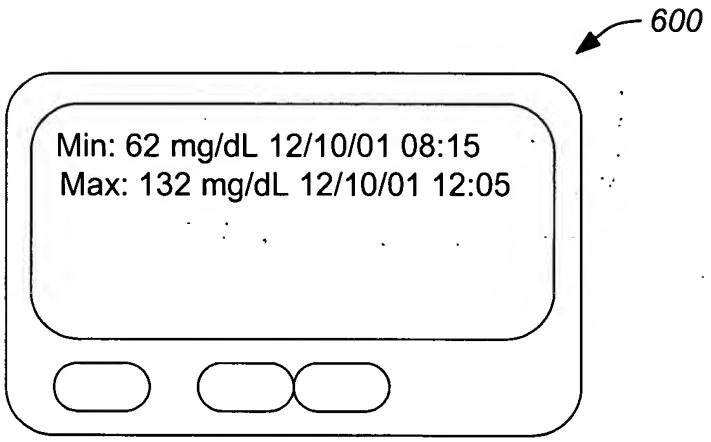
600
Min: 62 mg/dL 12/10/01 08:15
Max: 132 mg/dL 12/10/01 12:05

FIG. 6A

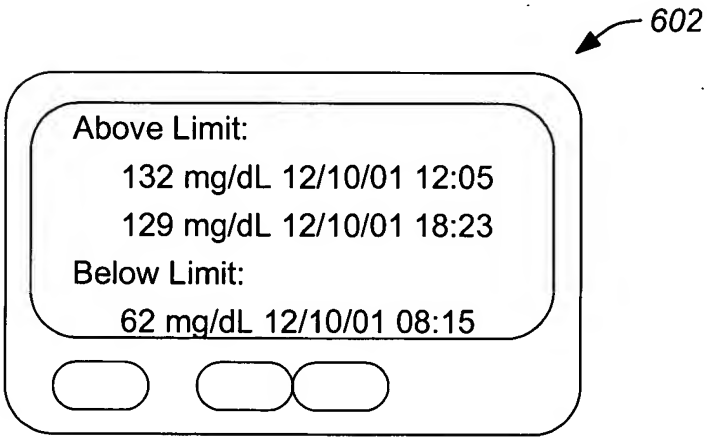
602
Above Limit:
132 mg/dL 12/10/01 12:05
129 mg/dL 12/10/01 18:23
Below Limit:
62 mg/dL 12/10/01 08:15

FIG. 6B

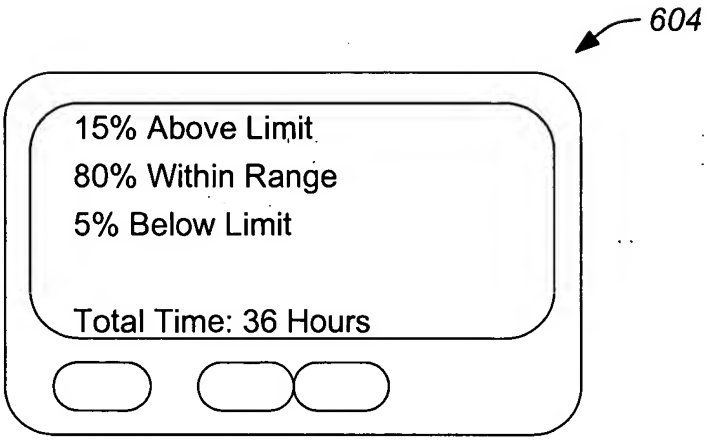
604
15% Above Limit
80% Within Range
5% Below Limit
Total Time: 36 Hours

FIG. 6C

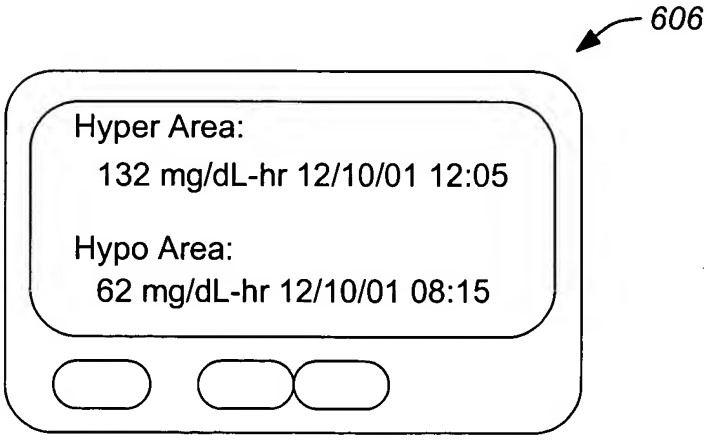
606
Hyper Area:
132 mg/dL-hr 12/10/01 12:05
Hypo Area:
62 mg/dL-hr 12/10/01 08:15

FIG. 6D

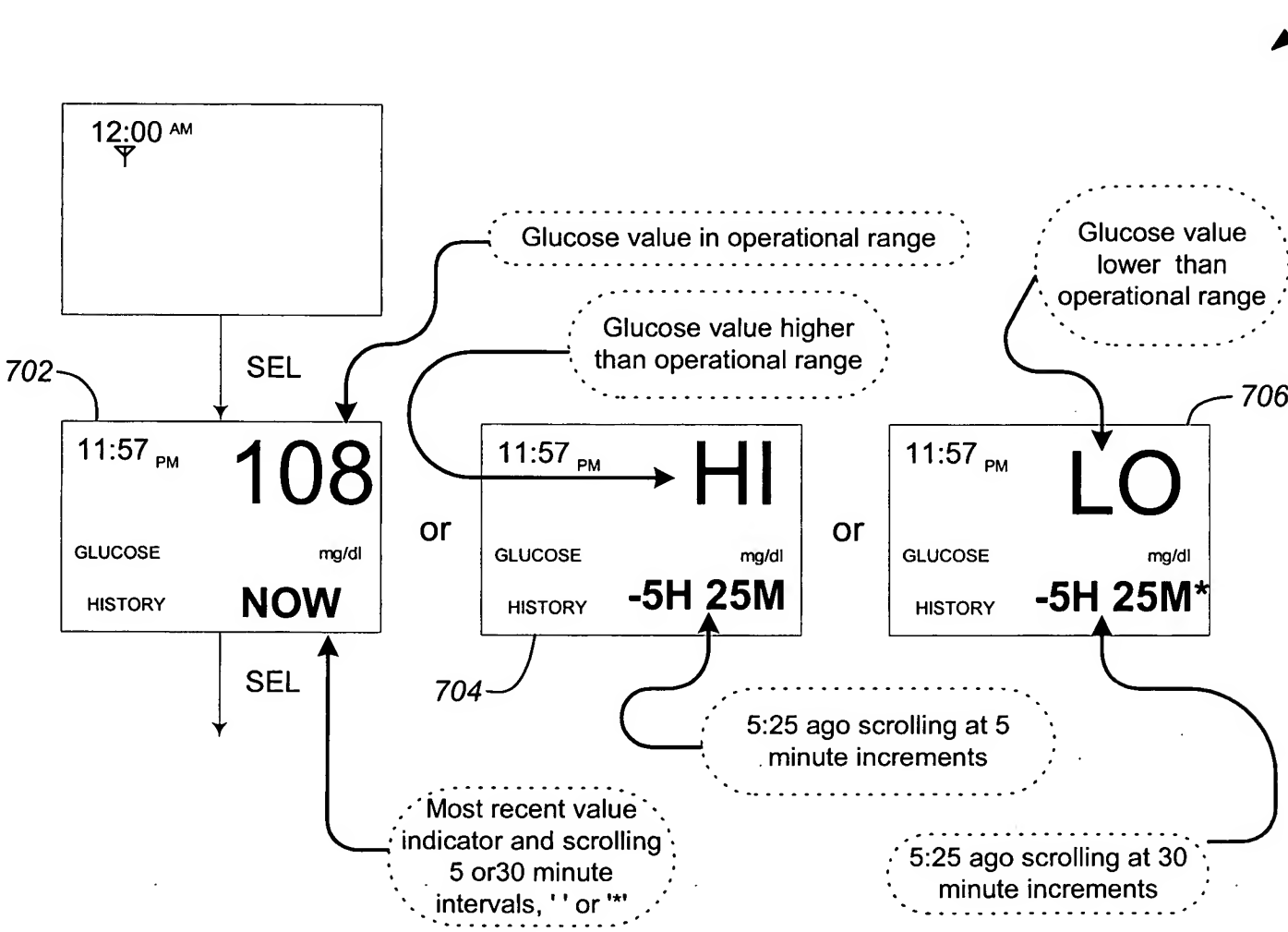
700
12:00 AM
SEL
702
11:57 PM
108
GLUCOSE
mg/dl
HISTORY
NOW
SEL
Glucose value in operational range
Glucose value higher than operational range
Glucose value lower than operational range
or
11:57 PM
HI
GLUCOSE
mg/dl
HISTORY
-5H 25M
704
or
706
11:57 PM
LO
GLUCOSE
mg/dl
HISTORY
-5H 25M*
5:25 ago scrolling at 5 minute increments
Most recent value indicator and scrolling 5 or30 minute intervals, ' ' or '*'
5:25 ago scrolling at 30 minute increments

FIG. 7